

PATENT CLAIMS

1. Coating material comprising a binding agent and at least one filler containing particles having a size and/or surface roughness of 10 µm or less, preferably 1 µm or less, specifically 0.1 µm or less, as well as a photocatalytically active agent, characterized in that the binding agent is decomposed at least partially by the photocatalytic action, preferably such that the photocatalytic decomposition is equivalent to or less than chalking level 1 as per DIN EN ISO 4628-6, so that a microstructured, self-cleaning surface is created, preferably in such a way that, given external weathering as per EN ISO 2810 (Klima Da, Probenkörper vertikal und dem Äquator zugewandt [Sample vertical and oriented in the direction of the equator]), the layer thickness of an external coating formed by the coating material is photocatalytically reduced by 0.1 µm or more, preferably 1 µm or more, per year.
2. Coating material in accordance with claim 1, characterized in that the binding agent is at least partially photocatalytically degradable and the catalytically active agent has at least one photocatalytically active metal oxide.
3. Coating material in accordance with claim 1 or 2, characterized in that the binding agent exhibits an aqueous polymer dispersion, a polymer dispersion capable of being redispersed in water, a hydrophobic resin and/or a preliminary resin product or so-called nano composite.
4. Coating material in accordance with any of the preceding claims, characterized in that the binding agent contains silicone or silicate.
5. Coating material in accordance with any of the preceding claims, characterized in that the catalytically active agent exhibits an oxide of titanium, zinc, iron, manganese, molybdenum and/or tungsten, at a level of 60 weight percent or more, preferably 80 weight percent or more, specifically 90 weight percent or more, relative to the total weight of the catalytically active agent.
6. Coating material in accordance with any of the preceding claims, characterized in that the catalytically active agent exhibits at least one additive, specifically ion, selected from C, N, S and/or from the group consisting of Pt, Rh, Mn, Cr, Ru, Ni, Pd, Fe, Co, Ir, Cu, Mo, Zr, Re, Ag and Au in the form of their oxides and/or halogenides, preferably at a level of 40 weight percent or less, especially preferably 20 weight percent or less, specifically 10 weight percent or less and more than 1 weight percent, preferably more than 2.5 weight percent, specifically 5 weight percent or more, relative to the total weight of the catalytically active agent.

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7. Coating material in accordance with any of the preceding claims, characterized in that the photocatalytically active agent consists of titanium dioxide, specifically of TiO₂ endowed with C, N and/or S, in amorphous form, partially crystalline form or in the form of anatas.

8. Coating material in accordance with any of the preceding claims, characterized in that the filler exhibits particles having a size and/or surface roughness of 10 µm or less, specifically 1 µm or less, especially preferably nano fillers in the form of highly disperse silica.

9. Coating material in accordance with any of the preceding claims, characterized in that the nano fillers in the form of highly disperse silica are silica gels, which are preferably produced by precipitation using the sol gel process.

10. Coating material in accordance with any of the preceding claims, characterized in that at least one filler exhibits a monomodal particle size distribution with a mean particle diameter of 10 µm or less, specifically 1 µm or less, especially preferably 0.1 µm or less.

11. Coating material in accordance with any of the preceding claims, characterized in that the coating material is formulated using an excess of filler.

12. Coating material in accordance with any of the preceding claims, characterized in that it exhibits pigments and/or commercially available additives, specifically accelerators and/or retarders.

13. Coating material in accordance with any of the preceding claims with 10 to 30 weight percent, specifically ca. 20 weight percent of a photocatalytically degradable binding agent, 2 to 30 weight percent, specifically 5 to 15 weight percent, especially preferably ca. 10 weight percent of a filler having a mean particle size of 1 µm or less, specifically 0.1 µm or less, such as nanoscaled silica, 2 to 15 weight percent, specifically 3 to 8 weight percent, especially preferably ca. 5 weight percent of a photocatalytically active pigment, such as TiO₂ endowed, if necessary, with C, N and/or S, as well as optionally 0.01 to 0.1 weight percent, specifically 0.05 weight percent of a pigment distributor, 0.1 to 1 weight percent, specifically ca. 0.3 weight percent of a thickener, 5 to 30 weight percent, specifically 10 to 20 weight percent of another filler, such as e.g. a fine quartz filler, 10 to 20 weight percent, specifically ca. 15 weight percent of a pigment, 2 to 8 weight percent, specifically ca. 6 weight percent, of a hydrophobization agent, up to 4 weight percent of a solvent, up to 0.8 weight percent of a preservative and/or up to 35 weight percent of water.

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14. Use of a coating material in accordance with any of the preceding claims for the coating of facades, specifically external facades, and/or other parts of buildings.